COURSE INFORMATION FORM

DISCIPLINE  Practical Nursing

CATALOG DESCRIPTION
This course will prepare the student practical nurse to perform limited intravenous fluid therapy treatment using the knowledge, skills, and competency required to perform such therapy safely and in accordance to Missouri Rule 4 CSR 200.6010.

PREREQUISITES
PNUR 110

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:

1. Identify the structure and function of the circulatory system, including differences between veins and arteries and the anatomical location of the veins used for administering intravenous therapy.
2. Identify duties and functions of the LPN in performing intravenous fluid therapy as defined by Missouri Rule 4CSR200-6.010, Intravenous Fluid Treatment Administration.
3. Verbalize IV therapy-related functions and duties that are specifically disallowed for IV-certified LPN’s.
4. Describe fluid and electrolyte imbalances and associated clinical manifestations with management measures specific to each imbalance.
5. Describe potential IV therapy-related local and systemic complications and appropriate nursing interventions and preventative measures.
6. Integrate principles of infection control relative to intravenous therapy nursing activities.
7. Identify various types of commonly used IV therapy equipment with usage indicators and how to monitor for defects or malfunction.
8. Initiate intravenous therapy.
9. Calculate, establish and maintain intravenous fluid and drug administration infusion flow rate.
10. Demonstrate competency in all procedures related saline or heparin locks.
11. Identify fluid or solution compatibility or incompatibilities.
12. Describe drug actions, interaction, adverse reactions, modes of administration, and data collection to the nursing management of the patient receiving intravenous drug therapy using evidence based practice.
13. Identify nursing considerations unique to the provision of intravenous therapy to clients in all developmental stages.
14. Identify the principles of total parenteral nutrition and indications for client care.
15. Describe monitoring of blood and blood component transfusions, recognize manifestations of various types of adverse transfusion reactions, and identify immediate intervention measures required for managing adverse transfusion reactions.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

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<th>Outcomes</th>
<th>ESO</th>
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PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Implements nursing care using basic skills and knowledge commensurate with a safe and effective licensed practical nurse practice.
2. Communicates therapeutically with patients/clients and families using verbal, non-verbal and written skills to communicate information.
3. Utilizes the nursing process for data collection, planning, implementation and evaluation in providing patient/client care across the life span.
4. Demonstrates critical thinking skills for safe clinical practice by applying theoretical knowledge throughout the wellness-illness continuum.
5. Integrates cultural, ethnic, and spiritual aspects into the plan of care for the patient/client.
6. Utilizes principles and provides care related to the patient/client’s developmental stages (Erickson’s and Maslow’s)
7. Displays responsibility, accountability and professionalism as a life long learner in their nursing practice.
8. Identifies the environment’s internal and external forces that affect the patient/clients well-being.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Quizzes (1-15)
2. Assignments (1-15)
3. Demonstrations (1-15)
4. Clinical Simulation (1-15)
5. Clinical Evaluation (1-15)
6. Final Examination (1-15)
COURSE OUTLINE FORM

DISCIPLINE    Practical Nursing

COURSE TITLE: Venous Access and Intravenous Infusion

Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Introduction to Intravenous Fluid Treatment Administration
   A. Missouri Rule 4CSR 200-6.010
   B. Administration of intravenous fluid treatment
   C. Functions and duties an IV-certified LPN may perform.
   D. Additional education needed to participate in IV therapy with neonates, obtain blood samples, hang IV fluid, and change tubing from multi-lumen central venous lines, PCA administration
   E. What an LPN shall not perform related to intravenous fluid therapy

II. Documentation
   A. Threefold purpose of documentation
   B. The five W’s that are essential elements of documentation
   C. Forms used to document the provision of IV therapy
   D. Guidelines for using abbreviations
   E. Abbreviations used when documenting IV therapy procedures to their definitions
   F. Errors commonly encountered in nursing documentation
   G. Components of an Incident Report or an Event Report

III. Fluids and Electrolytes
   A. Homeostasis
   B. Percentage of body water weight appropriate for various life stages
   C. The function of water in the body
   D. The importance of water balance
   E. Major source of loss of body fluids
   F. Body fluid compartments
   G. Functions of electrolytes
   H. The major cations, anions, and nonelectrolytes
   I. Acid-base balance
   J. Normal pH range of blood
   K. Major organs are involved in homeostasis
   L. Hydrostatic and osmotic pressure

IV. Fluid and Electrolyte Imbalances
   A. Nursing objectives in fluid and electrolyte imbalances
   B. Fluid and electrolyte imbalances to their causative factors
   C. Fluid and electrolyte imbalances to correct signs and symptoms
   D. Recognition and intervention is critical in acid-base imbalances

V. Parenteral Fluids
   A. Parenteral fluid administration
   B. Assessment parameters for patients receiving parenteral fluid therapy
   C. Definitions of pH, tonicity of fluid, hypertonic fluid, hypotonic fluid, and isotonic fluid

Revised 1/29/14
D. Specific parenteral fluids and differentiate their defining characteristics

VI. Potential Local and Systemic Complications
   A. Local and systemic complications
   B. Two classifications of intravenous therapy associated complications
   C. Symptoms associated with location complications and nursing interventions
   D. Symptoms associated with systemic complications and nursing interventions

VII. Infection Control
   A. Sources of bacteria responsible for IV-associated infections
   B. Factors that influence bacteria survival
   C. Extrinsic and intrinsic sources of contamination of an intravenous infusion system
   D. Bloodborne Pathogen Standard
   E. IV procedures that are accompanied by high risk for blood contact

VIII. Intravenous Therapy for all patients – Patient Approach
   A. Psychologically preparing the patient for intravenous therapy
   B. Factors that influence a patient’s degree of anxiety in receiving IV therapy
   C. Factors affecting the patient’s personal psychosocial resources
   D. Signs and symptoms indicative of a vasovagal reaction secondary to stress
   E. Etiology of dependent, regressive behavior often exhibited by an IV therapy patient
   F. Nursing considerations applicable to an uncooperative or confused IV therapy patient

IX. Identifying IV Therapy Equipment
   A. Terms related to vascular access devices: gauge, hub, length, and lumen
   B. Selection of a peripheral vascular access device
   C. Types of central venous access devices to their defining characteristics
   D. Disadvantages associated with parenteral fluid plastic bag containers
   E. Purpose of resealable injection ports
   F. Use of microbore extension tubing sets
   G. Purpose of needle protective systems and intravenous site protectors
   H. Types of electronic infusion devices

X. Preparing and Inserting Peripheral Intravenous Cannula
   A. Equipment and procedure for inserting a peripheral intravenous line
   B. Preparing the patient for insertion of peripheral intravenous line
   C. Selecting a peripheral vein for intravenous cannula insertion
   D. Sites to avoid when selecting a peripheral vein for intravenous cannula insertion
   E. Preparing site
   F. Safety precautions when inserting an over-the-needle catheter
   G. Securing and stabilizing the cannula
   H. Guidelines for applying the site dressing
   I. Documentation of information in the patient’s medical record regarding the procedure

XI. Converting a Peripheral Catheter to an Intermittent Infusion Device
   A. Uses of an intermittent infusion device
   B. Alternate terms often used in reference to intermittent infusion devices
   C. Maintaining patency of the intermittent infusion device
   D. Documentation of information after converting a peripheral catheter to an intermittent infusion device

XII. Discontinuing Peripheral IV sites
   A. Reasons for discontinuation of a peripheral IV site
   B. Nursing assessment discoveries that necessitate discontinuation of a peripheral IV site
   C. Principles of safe and effective peripheral IV site discontinuation
   D. Patient education regarding discontinued peripheral IV sites
   E. Documenting discontinuation of peripheral IV therapy
XIII. Principles of Parenteral Infusion Flow Rate
   A. Factors considered by physician when ordering flow rate of an intravenous infusion
   B. Information to be specified in the physician’s order
   C. The mathematical formula for calculating intravenous infusion flow rate
   D. Establishing infusion flow rate
   E. Potential consequences of inaccurate infusion flow rate
   F. Calculate infusion drops per minute using varied drop factors

XIV. Principles of Pediatric Intravenous Fluid Therapy
   A. Different age definitions for pediatric patients.
   B. Reasons for pediatric IV therapy
   C. Principles of pediatric fluid and electrolyte balance
   D. Psychological considerations of IV therapy to age of pediatric patient
   E. Equipment available for the pediatric patient
   F. Pediatric infusion sites
   G. Nursing care of the pediatric patient with an IV
   H. When an umbilical catheter can be used
   I. Product administered during exchange blood transfusion
   J. Close nursing observation of pediatric patients receiving intravenous drug therapy

XV. Principles of Geriatric Intravenous Fluid Therapy
   A. Characteristics to physiological change secondary to aging affecting intravenous therapy
   B. Intravenous therapy nursing principles specific to geriatric patients
   C. Assessment of geriatric intravenous therapy patients

XVI. Use of Armboards and Restraints
   A. Indications for armboard usage
   B. Armboard application
   C. Long-term IV therapy patients that are at high risk for armboard-related contractures
   D. Legal considerations to support the use of patient restraints
   E. Restraint application for the IV therapy patient

XVII. Principles of Intravenous Therapy Maintenance
   A. Goals of ongoing monitoring of an IV therapy patient
   B. Principles of cannula site assessment, action to be taken if cannula occludes
   C. Principals involved in maintaining flow rate
   D. Principals involved in routine or PRN changes in IV therapy-related equipment
   E. Factors affecting integrity of the latex injection port of an intermittent infusion device
   F. Principles for rotating peripheral cannula
   G. Factors necessitating a change in the IV system
   H. Actions to maintain the patency of intermittent infusion devices
   I. Documentation of intravenous therapy maintenance measures

XVIII. Introduction to Intravenous Drug Administration
   A. Three major objectives of VI drug administration
   B. Advantages of IV drug administration
   C. Hazards of IV drug administration
   D. Factors affecting responses to intravenous drugs
   E. Three types of intravenous incompatibilities
   F. Resources used to determine compatibility
   G. Factors that affect the stability or pH of drugs
   H. Drug classification IV-certified LPN’s are not allowed to administer
   I. Three modes of intravenous drug administration
   J. Differences between IV push and IV bolus drug administration
K. Peak level and trough level blood specimens
L. Six specific rights of the patient to receive safe and accurate drug administration
M. Documentation of administered intravenous drugs

XIX. Untoward Response to Intravenous Drug Administration
A. Untoward drug responses and potential consequences of adverse drug reactions
B. Drug classifications most often responsible for adverse drug reactions
C. Etiology of adverse drug reactions
D. Causes of anaphylaxis-associated death, signs and symptoms of anaphylaxis, elements comprising treatment of anaphylaxis
E. Anaphylaxis documentation
F. Taking a history regarding allergies of a comatose patient
G. Communication of information of history to the health care team
H. Nursing responsibilities relative to IV drug administration
I. Stages of care in which medication errors may occur
J. Etiological factors contributing to drug errors
K. Techniques used to prevent drug errors
L. FDA’s adverse drug reaction voluntary reporting program

XX. Calculations for Intravenous Drug Administration
A. Equivalencies for given units of measure, convert weight in pounds to kilograms
B. Calculate dosage based on microgram / kilogram of weight
C. Calculate dosage based on milligram / kilogram of weight
D. Mathematical formula to determine IV drug dosing in milliliters
E. Drug concentration in fluid
F. Drug dosage based on microgram / kilogram / minute
G. Heparin infusion rated based on units / hour
H. Calculate flow rate of IV drugs administered by gravity flow infusion
I. Calculate intravenous drug dose

XXI. Intravenous Piggyback Drug Administrations (IVPB)
A. Intravenous piggyback infusion (IVPB)
B. Employed modes of IVPB drug administration
C. Principles of IVPB drug administration
D. Documentation of IVPB administration
E. Nursing considerations specific to precalculated, prepackaged drug systems containing diluent and drug

XXII. Monitoring Chemotherapy Patients / LPN Scope of Responsibility
A. IV-certified LPN’s scope of responsibility when caring for chemotherapy patients according to Missouri Rule 4 CSR 200-6.010
B. Actions of cytotoxic drugs
C. Goals of chemotherapy
D. Chemotherapy side effects or toxicities and their nursing implications
E. Nursing considerations applicable to the IV therapy-certified LPN caring for an oncology patient
F. Biohazard safety precautions applicable to chemotherapy

XXIII. Monitoring Blood Transfusion Therapy
A. The role of the LPN in blood transfusion administration
B. Principles of blood administration
C. Signs and symptoms that are monitored during a blood transfusion
D. Two classifications of adverse reactions to a blood transfusion
E. Two sub-classifications of the adverse transfusion reaction classifications
F. Potential transfusion reactions
G. Cause of an acute intravascular hemolytic reaction

Revised 1/29/14
H. Nursing intervention if an intravascular hemolytic reaction occurs
I. Frequently encountered transfusion reaction
J. Risk factors predisposing patient for a febrile nonhemolytic transfusion reaction
K. Nursing intervention if a febrile transfusion reaction occurs
L. Clinical signs and symptoms that indicate an urticaria reaction
M. Distinctive features of a transfusion-related anaphylactic reaction
N. Two factors essential for a favorable outcome when transfusion-related non-cardiogenic pulmonary edema develops
O. Factors that would indicate possible contamination of a unit of blood
P. Etiology of transfusion-associated circulatory overload
Q. Transfusion route of administration recognized as having a high risk for the occurrence of hypothermia
R. Electrolyte most affected by citrate toxicity
S. Nursing interventions when an air embolism is identified
T. The type of hepatitis virus responsible for 90% of transfusion transmitted viral hepatitis
U. Adverse transfusion reaction known to have a propensity to result in chronic liver failure
V. Measures advocated to minimize transfusion-transmitted HTLV
W. Documenting of an adverse transfusion reaction
X. Required follow-up reporting of adverse transfusion reactions

XXIV. Total Parenteral Nutrition and Nursing Practice
A. Definition of total parenteral nutrition (TPN)
B. Indicators for TPN
C. Nutrients essential for TPN
D. Guidelines for the safe handling of TPN solutions
E. Principles of peripheral parenteral nutrition, central venous parenteral nutrition and cyclic nutrition therapy
F. Vital nursing considerations relative to TPN flow rate
G. TPN-associated potential complications
H. Common source of TPN-related sepsis
I. Nursing considerations specific to TPN administration and lipid administration
J. Contraindications to lipid therapy

XXV. Procedures in Phlebotomy
A. Equipment associated with phlebotomy
B. Correct evacuated tubes to use for proper collection technique
C. Common complications of phlebotomy
D. Sites commonly used for phlebotomy
E. Accurately perform phlebotomy